

power converters being matable with the backplane to convey power to or from the converters and external circuitry via the backplane and to remove heat from the converters during operation.

54. (new) The system of claim 53, wherein the backplane is configured to convey input power to the converters and output power from the converters.

55. (new) The system of claim 53, wherein the converters are configured to generate output power independently on one another.

56. (new) The system of claim 53, wherein the converters are configured to generate output power having different electrical characteristics.

57. (new) The system of claim 53, wherein the converters are configured for plug-in engagement with the backplane.

58. (new) The system of claim 53, wherein the backplane includes a channel for circulating a cooling medium, and wherein at least one of the converters includes a passage in fluid communication with the channel.

59. (new) The system of claim 53, wherein at least one of the converters is configured to perform AC-to-AC power conversion.

60. (new) The system of claim 53, wherein at least one of the converters is configured to generate three-phase output power.

61. (new) The system of claim 53, wherein at least one of the converters includes an energy storage circuit for storing electrical energy during conversion of power to the output power.

62. (new) The system of claim 53, wherein each converter includes a thermal support and power electronics circuitry mounted on the thermal support, and wherein during operation of the power electronics circuitry thermal energy is transferred from the power electronics circuitry to the thermal support of the respective converter and therefrom to the backplane.

63. (new) An expandable power converter system comprising:
a plurality of modular power converters, each power converter including power electronics circuitry for converting input power to output power having desired electrical characteristics, the power converters, at least one of the converters including power electronics circuitry mounted on a thermal support having a passage for circulation of a cooling medium; and
a backplane configured to receive the power converters and to transmit at least electrical power signals to or from the converters, the backplane including a channel in fluid communication with the passage of the at least one converter for circulating the cooling medium.

64. (new) The system of claim 63, wherein the backplane is configured to convey input power to the converters and output power from the converters.

65. (new) The system of claim 63, wherein the converters are configured to generate output power independently on one another.

66. (new) The system of claim 63, wherein the converters are configured to generate output power having different electrical characteristics.

67. (new) The system of claim 63, wherein the converters are configured for plug-in engagement with the backplane.

68. (new) The system of claim 63, wherein at least one of the converters is configured to perform AC-to-AC power conversion.

69. (new) The system of claim 63, wherein at least one of the converters is configured to generate three-phase output power.

70. (new) The system of claim 63, wherein at least one of the converters includes an energy storage circuit for storing electrical energy during conversion of power to the output power.

71. (new) An expandable power converter system comprising:
a backplane configured to receive power converters and to transmit at least electrical power signals to and from the converters, the backplane including a channel for circulating a cooling medium therethrough; and
a plurality of modular power converters configured for plug-in mounting to the backplane, each power converter including power electronics circuitry for converting input power to output power having desired electrical characteristics, the power converters being matable with the backplane to convey power to or from the converters and external circuitry via the backplane and to remove heat from the converters during operation.

72. (new) The system of claim 71, wherein the backplane is configured to receive at least three converters.

73. (new) The system of claim 71, wherein each of the converters has connectors extending from a single side thereof for engagement with the backplane.

74 (new) The system of claim 71, wherein at least one of the converters includes a thermal support and a passage extending through the thermal support for receiving the cooling medium from the backplane to remove heat during operation.

75. (new) The system of claim 71, wherein the backplane is configured to convey input power to the converters and output power from the converters.

76. (new) The system of claim 71, wherein the converters are configured to generate output power independently on one another.

77. (new) The system of claim 71, wherein the converters are configured to generate output power having different electrical characteristics.

78. (new) The system of claim 71, wherein at least one of the converters is configured to perform AC-to-AC power conversion.

79. (new) The system of claim 71, wherein at least one of the converters is configured to generate three-phase output power.

80. (new) A method for converting electrical power to output power having desired electrical characteristics, the method comprising:

supporting a plurality of modular converters in a system;

conveying input power to the converters and output power from the converters; and

extracting thermal energy from the converters during operation.

81. (new) The method of claim 80, comprising driving the converters to generate output power in each converter having different electrical characteristics.

82. (new) The method of claim 80, comprising circulating a cooling medium through at least a portion of a support on which the converters are supported.

83. (new) The method of claim 82, comprising circulating the cooling medium through from the support through at least one of the converters.

84. (new) A system for converting electrical power to output power having desired electrical characteristics, the system comprising:

means for supporting a plurality of modular converters in a system;